A CONTRIBUTION TO THE HERPETOLOGY OF MISSOURI.*

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It is only for the last few years that my son Henry, who is also an enthusiast in this particular line, and I, have extended our excursions into Jefferson County, where we have found a very interesting field in the outrunners of the Ozark mountains, where we begin to encounter the hardier species of the Subtropical realm which the late Professor Edw. D. Cope subdivided into the Austroriparian and Sonorian subregions. The farther south we proceed in the Ozark mountains the more numerous become not only the species but also the specimens, so that, when we reach the southern slope of these mountain chains in Missouri, as we had the opportunity of doing this year (but unfortunately a little too late in the season), one would think he was near the Gulf of Mexico, so plentiful do these animals become.

I may call attention to the fact that the Ozark mountains, up to this date, have not been well investigated in either their fauna or flora. The literature is also very meager. For example, Professor D. S. Jordan, in his Manual of Vertebrate Animals of the Northern United States, including the district north and east of the Ozarks and east of the Missouri river, stops right there and leaves our mountains as a "terra incognita," to science. I would like to remind you also of the fact that reptiles and batrachia are not migratory, like birds or mammals, and for this reason they give a clearer idea of the geographical realm to which they belong.

I will now consider unrecorded species for the fauna of the State of Missouri. Besides two Rattlesnakes and the Copperhead, which we encounter all over the State, we find in our southern frontier counties another Pit viper, called

* Presented to The Academy of Science of St. Louis, December 6, 1897.

the Cottonmouth, Black Moccasin or Water Moccasin (*Agkistrodon piscivorus* Lacépède), a real poisonous snake not to be confounded with what the farmers and fishermen in the northern and central part of the State call Water Moccasin, which is the common Watersnake (*Natrix sipedon* Linnaeus), a non-poisonous snake, but which, in old specimens, has a very close resemblance to the true Cottonmouth, so that it takes a person already very familiar with the habits of either of them to distinguish one kind from the other. In the year 1892, when we had a very high river and all the bottom lands opposite the city of St. Louis were inundated so that the Watersnakes had sought a refuge in some of the larger trees yet projecting out of the water, we captured a few of them by approaching the trees with a skiff.

At the request of the Agricultural Department of Washington, D. C., I sent them some very large specimens of the common Watersnake, accompanied by a large Cottonmouth, just to show the close resemblance of the two kinds.

The next species I wish to mention is a true Watersnake (*Natrix fasciata* Linnaeus), the Banded or Southern Watersnake. We found these to be very abundant in Butler and Stoddard Counties. They have the same habits as all other water snakes, and those which we found and captured were all gorged with small pikes.

Holbrook's Watersnake or the Diamond Watersnake (*Natrix rhombifer* Hallowell) is our next species. I have caught specimens of this kind right opposite St. Louis, in Madison, St. Clair and Monroe Counties, Illinois, but had not the opportunity to find any in Missouri until this year, when I found them in Butler and Stoddard Counties. They were plentiful, and also show a little different marking, particularly on the ventral side of the body, from those which we caught in Illinois. They represent plainly only a variety of the common Watersnake, as Professor Samuel Garman in his synopsis of North American snakes has arranged them.

The last kind of serpent to report as new to the State is *Haldea striatula* Linnaeus, the Little Brown Snake, a small slender animal hardly over a foot in length. We found these for the first time in the neighborhood of Pevely, Jeffer-

son County, on a sunny slope of the Ozarks, under some rocks. Their marking is also a little different from that of those that I have found in some more Southern States, — Texas and Alabama.

Another very peculiar snake is *Tantilla gracilis* Baird & Girard, a so-called "suspicious snake." It belongs to a class of snakes called Opisthoglypha, serpents having grooved teeth or fangs situated in the back of the jaw, contrary to the Proteroglypha, which have the fangs in the front of the jaw, to which class belong the deadly Cobra of India and the Coral Snakes of America. In the species under consideration, the fangs in the rear of the mouth are generally a little separated from the rest of the teeth and are directed backwards and grooved on their posterior or concave side. These grooves communicate with the poison ducts. Most of these snakes are only small, as are also the specimens under consideration, and therefore could not inflict on a person a dangerous wound, whereas the small animals, which they catch, are said to be worked back in the mouth, stung by these fangs and so paralyzed by the poison as to become an easy prey for the snake. This species is so far only mentioned from Texas, but I have found specimens only a few miles from the city of St. Louis, very likely their most northern and eastern record. In Jefferson County they become more abundant. This serpent is a representative of the Sonorian region.

Among the chelonians or turtles we made one good find, as we discovered the Louisiana Mud Turtle, but so far only in one specimen, near Poplar Bluff, Butler County. It was found under a log, a good distance away from any water. Professor H. Garman, in his synopsis of Reptiles and Amphibians of Illinois, records *Kinosternum pennsylvanicum*, the Eastern Mud Turtle, as common in southern Illinois; but our specimen is *Kinosternum louisianae* Baur, and quite different from its eastern congener, which is found all through the States of Louisiana, Texas and Arkansas. Very likely this will be the most northern limit to its distribution.

To the list of batrachia I have to add two species. The first is *Plethodon erythronotus* Green, so far never recorded from the western side of the Mississippi River. The late

Professor Edw. D. Cope, in Bulletin No. 34 of the United States National Museum, 1889, North American Batrachia, writes on page 134, "This species, including all varieties, has an extensive range, being found throughout the United States east of the Mississippi River." Last spring I was surprised by my friend Mr. Colton Russell, of our city, bringing me a salamander, which I recognized at once as the species under consideration, and which he had found not far from Creve Coeur Lake, St. Louis County. I afterwards found a few more in the same neighborhood, but they were not very abundant. The second kind of salamander is the handsomely marked species *Amblystoma opacum* Gravenhorst. We found eleven of them in Butler County, and three were brought to me by Mr. George Miller, of St. Louis, who collected them in Stoddard County. The salamander seems to be quite common in that neighborhood.

I wish also to call attention to the following species, which I have found within the limits of the State in the last few years:—

Crotaphytus collaris Say, the Collared Lizard or Bull Lizard, as the farmers call it, which is recorded in North American Fauna, No. 3, 1890, page 104, as being found in Kansas, Indian Territory, Arkansas, Texas, New Mexico, and Mexico. Say's specimens, in the National Museum, came from the Verdigris River, near its junction with the Neosho River, in the Creek Nation, Indian Territory, and furnish the most eastern record, so I was not a little astonished when we happened to find this large lizard near Pevely, Jefferson County, in the outrunners of the Ozark Mountains. We afterwards also found numbers of specimens in the mountainous and more southern counties, *e. g.*, Washington, Phelps, St. Francois, Madison and Iron Counties. This lizard carries its tail more elevated when running, and not straight out backwards as all the other lizards do. The species belongs to the Sonorian region, and we find it here at its most eastern limit. This is the largest species of lizard in the State, and we come now to consider also the smallest kind, *Lygosoma laterale* Say, the Ground Lizard. This nimble animal is quite common in all the Southern States, and also in all the southern counties of

Missouri, but it reaches its most northern recorded limit at Cliff Cave, only eleven miles south of the city of St. Louis, where we have collected so far two specimens. As soon as we come to Jefferson County, they become more plentiful. The species belongs to the Austroriparian region. *Bascanium flagellum* Shaw, the Coach Whip Snake, has only of late years been recorded from the State. The late Professor E. D. Cope, when he visited St. Louis three years ago and examined my collection, told me that he had found this snake in Stone County, Southwestern Missouri, but since that time we have been fortunate enough to capture some old as well as young specimens in the neighborhood of Pevely, Jefferson County. They are considered by no means common, and are very swift. I have also received one specimen from Mr. O. Funke, from near Rolla, Phelps County.

In conclusion I wish to mention two other batrachians. One is a little toad peculiar to America, *Engystoma carolinense* Holbrook. This toad is very common in the Southern States. Dr. Kennicott sent some that he caught in New Madrid County, Mo., to the National Museum. I have found some specimens in Butler County, and three at Cliff Cave, St. Louis County, which is, to all appearance, the most northern locality of this subtropical species. These toads are found under rocks, sometimes on the top of the bluffs. They are very hard to see, as they are partly hidden in the ground and also protected by their color.

Our last specimen is the so-called Hellbender or Mud Devil (*Cryptobranchus alleghaniensis* Daudin). This is one of the largest of salamanders, and next in size to the Giant Salamander of Japan. It lives in creeks fed by spring water, and those that I have, come from a place called Boiling Spring, near Arlington, Phelps County, Mo. They are often caught by fishermen on the hook baited with minnows, and are sluggish animals but very voracious.

Issued December 31, 1897.